	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	71488	(typeset or typesetting or build or built or building or construct or constructed or constructing or construction or generate or generated or generating or generation or design or designed or designing or define or defined or defining or definition or format or formatted or formatting or layout or laid or laying or template or arrange or arranged or arrangement or arranging or create or created or creating or creation or designate or designated or designating or designation or design or designed or designing or define or defined or defining or definition or customize or custom or customized or customizing or customization of personal or personalize personalizing or personalization) near5 (label or labeling or tag or sticker)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:16
2	BRS	L2	1238450	(color or palette or size or shape or style or styling or attribute or content or appearance or font or letter or lettering or alphanumeric or number or text or graphic or symbol) near5 (position or location or area or region or zone)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:17

	Type	L #	Hits	Search Text	DBs	Time Stamp
3	BRS	L3	7388	2 near5 (label or labeling or tag or sticker)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:18
4	BRS	L4	140110	(2 or 3) near5 (designate or designated or designating or designation or design or designed or designing or define or defined or defining or definition or customize or custom or customized or customizing or customization of personal or personalize personalizing or personalization or assign or assigned or assigning or assignment or select or selected or selecting or selection)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:18

	Type	L #	Hits	Search Text	DBs	Time Stamp
5	BRS	L5	1140075	(rotate or rotated or rotating or rotation or rotational or translate or translated or translating or translation or orientation or orientate or orientated or orientating or locate or located or location or location or position or positioned or positioning) near5 (color or palette or size or shape or style or styling or attribute or content or appearance or font or letter or lettering or alphanumeric or number or text or graphic or symbol or code or barcode)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:19
6	BRS	L6	7955	5 near5 (label or labeling or tag or sticker)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:19

	Type	L #	Hits	Search Text	DBs	Time Stamp
7	BRS	L7	109344	(5 or 6) near5 (designate or designated or designating or designation or design or designed or designing or define or defined or defining or definition or customize or custom or customized or customizing or customization of personal or personalize personalizing or personalization or assign or assigned or assigning or assignment or select or selected or selecting or selection)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:19
8	BRS	L8	36721	(print or printing or printed) near5 (label or labeling or tag or sticker)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:20
9	BRS	L9	665	1 and 4 and 7 and 8	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:20
10	BRS	L10	225461	(data or information or specification or input) near5 (menu or screen or window)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:20

	Type	L #	Hits	Search Text	DBs	Time Stamp
11	BRS	L11	52702	10 near10 (typeset or typesetting or build or built or building or construct or constructed or constructing or construction or generate or generated or generating or generation or design or designed or designing or define or defined or defining or definition or format or formatted or formatting or layout or laid or laying or template or arrange or arranged or arrangement or arranging or create or created or creating or creation or designate or designated or designating or designation or design or designed or designing or define or defined or defining or definition or customize or custom or customized or customizing or customization of personal or personalize personalizing or personalization)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:21
12	BRS	L12	4074	11 same (2 or 5)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:21
13	BRS	L13	23	9 and 12	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	2005/09/26 18:22

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	Document ID	Issue Date	Inventor	Current OR	Current XRef	Pages
1	US 5791791 A	19980811	Watanabe; Kenji et al.	400/76	358/1.9; 400/9	27
2	US 5975779 A	19991102	Watanabe; Kenji et al.	400/615.2		26
3	US 6646649 B1	20031111	Tanabe; Kenichi et al.	345/588	345/589; 345/592; 345/593; 345/596; 345/597	20
4	US 6747756 B1	20040608	Tanabe; Kenichi et al.	358/1.16	358/1.9; 358/3.01; 358/523; 358/530	23

L13 results

US-PAT-NO: 5791791
DOCUMENT-IDENTIFIER: US 5791791 A
See image for Certificate of Correction
TITLE: Character information processor
DATE-ISSUED: August 11, 1998
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Watanabe; Kenji	Tokyo	N/A	N/A	JP
Kameda; Takanobu	Tokyo	N/A	N/A	JP
Shimmura; Tomoyuki	Tokyo	N/A	N/A	JP
Hayama; Hitoshi	Suwa	N/A	N/A	JP
Kurashina; Hiroyasu	Suwa	N/A	N/A	JP
Hosokawa; Takeshi	Suwa	N/A	N/A	JP

US-CL-CURRENT: 400/76, 358/1.9 , 400/9

ABSTRACT: A character information processor for carrying out the processing for printing an input character string, includes: a contact-command receiving section for receiving a contact command which commands to print at a character pitch of 0 between the adjacent two characters; and a printing control section for causing to print two characters, which are defined by the contact command, at a character pitch of 0. In addition, a character information processor for printing an input character string on a printed medium so as to exhibit a printing effect on the basis of the stored attribute data of printing effect, includes: a changed-contents available-extent receiving section for allowing a user to select an available extent of the attribute data of printing effect from a plurality of phased extents with respect to the input character string, each of the phased extents having a greater size than an available minimum size; and an attribute-data changing section for allowing to change the attribute data of printing effect in accordance with the changed contents received by the attribute-data changed-contents receiving section.
4 Claims,   18 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 13

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Brief Summary Text - BSTX (8): In addition, in the case of a tape printing device, users tend to require that a label made by the tape printing device has many printing effects. Therefore, functions for complying with such a request for the variety of printing effects have been proposed.

Brief Summary Text - BSTX (9): The printing effects herein include the effect on the whole input character string (which will be hereinafter referred to as a "document"), the effect on a partial character-string unit (which will be hereinafter referred to as a "paragraph") obtained by dividing a character string in the longitudinal direction of a tape, and the effect on the respective characters. The attributes of printing effects on a document include, for example, the length of a label, the lengths of margins provided

before and after a character string, a ground design applied to the whole label, and so forth (a set of these attributes will be hereinafter referred to as a "format"). In addition, the attributes of printing effects on a paragraph include, for example, the character size on the respective lines, the layout of characters in a paragraph, the table printing, and so forth (a set of these attributes will be hereinafter referred to as a "style"). Moreover, the attributes of printing effects on the respective characters include the ornamental writing, the half-tone dot meshing, and so forth (a set of these attribute will be hereinafter referred to as a "mode").

Brief Summary Text - BSTX (13): An imprint figure formed on a seal has various ornaments although the degree of ornament is less than those of designs on a label, and it often includes an optional mark. For example, a logo mark is applied to a company's name seal. In a case where such a mark is made using the external character function, it may be required to divide the mark into two external characters in view of the size thereof and so forth. In this case, when the mark is transferred and printed, the attribute must be set so that these external characters contact with each other. In the case of word processors, personal computers and so forth, although the character pitch can be set only for any one of the whole pages, each page and each line, it can not be set for single characters. Therefore, it is not possible to set a single character pitch downstream of a selected character different from the other character pitches.

Detailed Description Text - DETX (55): In a case where an editing symbol is the present proposed editing symbol, when the select key is operated, the routine goes from step 107 to step 109, and it is decided by the CPU 21 that the present proposed editing symbol is selected. In addition, the CPU 21 causes to store the code of the selected editing symbol at a location next to the prior final character code in a text area for input character strings in the RAM 23. Moreover, the CPU 21 operates the display buffer in the RAM 23 to cause the displayed screen to return to the character input screen displayed at the stage that the symbol key is operated, and to display a dot pattern which defines the editing symbol at the character input location directed by the cursor when the symbol key is depressed, so that a series of processing steps are completed.

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanabe; Kenichi	Tokyo	N/A	N/A	JP
Ono; Hiroshi	Tokyo	N/A	N/A	JP
Konishi; Yoshiharu	Suwa	N/A	N/A	JP
Hayama; Hitoshi	Suwa	N/A	N/A	JP

US-CL-CURRENT: 358/1.16, 358/1.9 , 358/3.01 , 358/523 , 358/530

ABSTRACT: There is provided a color printing apparatus capable of easily and rapidly setting the color for each of edited items relating to color without lowering the degree of freedom of setting even if there are a large number of selectable edited items relating to color.

  The color printing apparatus has previously stored a plurality of sets of combinations of set values for a plurality of edited items relating to the color of the printed image, allows a user to select any one of the combinations of set values, and stores the set values of the selected combination along with the printed image so that the stored set values are rewritable by separately setting the edited items relating to the color of the printed image. Alternatively, the color-printing apparatus allows a user to form input a character string in accordance with a selected use, has stored a combination of set values for a plurality of edited items relating to the color of the printed image for the selected use, with respect to a plurality of uses relating to a form input, and stores the set values for a plurality of edited items relating to the color of the printed image for the selected use, along with the printed image so that the stored set values are rewritable by separately setting a part or all of the edited items relating to the color of the printed image.

5 Claims,   19 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 12

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Detailed Description Text - DETX (33): Referring to the accompanying drawings, the operating procedure and operation for preparing a label by means of the tape printing apparatus 1 will be described below.

Detailed Description Text - DETX (35): When only the line head mark shown in FIG. 6 is displayed, a process for inputting a character string "Fragile" to edit the character string in various ways to print the edited character string to prepare a label will be described in due order.

Detailed Description Text - DETX (39): As shown in FIG. 7, if the character string "Fragile" is inputted, the character string "Fragile", together with its printed image and

label length (which will be hereinafter referred to as a "tape length"), which are arranged on the upper half thereof, is displayed on the display part 84.

Detailed Description Text - DETX (40): This printed image is displayed on the display part 84 by allowing the data for the character string "Fragile" to be expanded for the printed image by means of the RAM 240 and outputting its control signal to the liquid crystal driving circuit 283. On the other hand, the tape length is displayed as a value obtained by adding forward and backward margins to a value which is calculated on the basis of the size of each of the characters of "Fragile", the number of the characters and the character gap (i.e. distance between adjacent two of the characters). Furthermore, in the tape printing apparatus 1, the user can set the length of a label in order to make a label having a constant length (a constant-length printing). In this case, the set length is displayed as the tape length.

Detailed Description Text - DETX (42): Edited items will be briefly described below. As units for editing, there are three stages of formats, styles and modes. The formats relate to the whole label. Among the formats, one having no relation to color is called a sentence format, and one relating to color is called a color format. The styles relate to each part (which will be hereinafter referred to as a "paragraph"), which has, e.g., one or more characters wished to have different attributes even if the number of lines is different or the same and which is divided in a longitudinal direction of the label. Among the styles, one having no relation to color is called a paragraph-style, and one relating to color is called a color style. The modes relate to each of characters. Among the modes, one having no relation to color is called a character mode, and one relating to color is called a color mode.

Detailed Description Text - DETX (43): Furthermore, the mode relating to each of characters can be designation of a paragraph or the whole label according to its designation. In addition, the style relating to each of paragraphs can be designation of (the character string of) the whole label according to its designation.

Detailed Description Text - DETX (44): The edited items belonging to the document format include (1) a ground tint attribute relating to the selection of the kind of a background pattern (a ground tint), (2) a ground tint pattern attribute relating to the size of a ground tint, (3) a constant-length printing attribute relating to the selection of a length in the constant-length printing, (4) a justification attribute relating to the arrangement of each of characters in the constant-length printed label (front justification, centering, equal space, rear justification), (5) a margin attribute relating to the amount of margins provided on the front and rear sides in a longitudinal direction of a label, and so forth.

Detailed Description Text - DETX (48): The edited items belonging to the character mode includes (1) a vertical/horizontal attribute defining whether a character serving as an object should be vertically or horizontally written, (2) a Japanese character typeface attribute defining the Japanese character typeface for a character serving as an object, (3) an alphanumeric character typeface attribute defining the alphanumeric character

typeface for a character serving as an object, (4) a decorative character attribute defining the modification for a character serving as an object (outline character, shadow character, italic character, highlighted character, etc.), (5) an expansion/contraction attribute defining whether a character serving as an object should be expanded or contracted from the basic character size on a line, to which the character belongs, (6) an arrangement attribute defining whether the expanded or contracted character should be arranged at the same position as, below or above the basic position on the line, (7) an enclosing/meshing attribute defining whether the enclosing or half-tone dot meshing should be applied to a character serving as an object, (8) a character gap attribute defining a gap between a character serving as an object and the next character, (9) a pitch attribute defining whether the character gap should be automatically determined or fixed, and so forth.

Detailed Description Text - DETX (59): When the execution of the automatic color designating program 223 starts, a select screen (a select screen in the first hierarchy) including "auto-color", "color form" and "special color form" as options is displayed (step ST1). Then, the option is determined (step ST2). While the cursor is positioned at the "auto-color" by operating the cursor key 327 or the like, if the "auto-color" is selected by operating the select key 328, the processing for setting edited items by the auto-color function, the details of which are shown in FIG. 10, is executed (step ST3). While the cursor is positioned at the "color form", if the "color form" is selected by operating the select key 328, the processing for setting edited items by the color form function, the details of which are shown in FIG. 14, is executed (step ST4). While the cursor is positioned at the "special color form", if the "special color form" is selected by operating the select key 328, the processing for setting edited items by the special form function, the details of which are shown in FIG. 16, is executed (step ST5).

Detailed Description Text - DETX (63): While the cursor is positioned at the identification name of any one of the color sets, if any one of the color sets is selected by operating the select key (the above described step ST11), the CPU 210 stores the set values for the edited items belonging to the color format, the color style and the color mode for the color set with respect to the whole inputted character string (step ST12). That is, the CPU 210 stores the set values for the selected color in place of the set values for the edited items belonging to the color format, the color style and the color mode before the operation of the function key 320 relating to the automatic color designating function. Thereafter, the CPU 210 causes the display screen to return to the input screen for characters (step ST13), and ends the automatic color designating program 223.

Detailed Description Text - DETX (67): With respect to each of the uses serving as the options in the second hierarchy for the color form, the color sets relating to the color format, the color style and the color mode are not only defined, but the set values (not shown) for the edited items belonging to the document format, the paragraph style and the character mode are also defined. The defined information is stored in, e.g., the ROM 220. For example, in the cases of the use for the VHS cassette tape, the set values for edited items, such as the size (constant-print item or the like) of a label intended to be used for a VHS cassette tape, and the character size, which have no relation to color, are also defined in addition to the color sets.

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Detailed Description Text - DETX (70): In the display on the input screen at step ST23, even if there are characters inputted before the operation of the function key 320 relating to the automatic color designating function, the characters are deleted. In addition, on the input screen during this return, marks for guiding the position of a picture character to be inputted and the position of a letter character to be inputted are also displayed according to the selected use so as to facilitate the input of characters meeting the use.

Detailed Description Text - DETX (76): With respect to each of the uses serving as the options in the second hierarchy for the special color form, the color sets relating to the color format, the color style and the color mode are not only defined, but the set values (not shown) for the edited items belonging to the document format, the paragraph style and the character mode are also defined. The defined information is stored in, e.g., the ROM 220. Moreover, the positions of characters to be printed and the maximum number of characters are also defined.

Detailed Description Text - DETX (84): As the verifying function, there is a check display function of allowing the batch or gradual display of set-value information (printed information) based on the edited contents, on the display part 84 of the display screen 81 to allow the verification of the set-value information based on the edited contents. There is also a preview display function of allowing the display and simple verification of the print image of the whole label on the display part 84.

Detailed Description Text - DETX (85): If the user verifies the edited contents and the print image of the whole label by the above described check function and preview display function, the user operates the print key 321 to command print. At this time, a printed image (a composite image of a background image and a character image) reflecting the set values by editing is printed on the print tape T1, and the laminate tape T2 is stuck on the printed portion. Thereafter, the printed portion of the tape T is discharged from the tape exit to the outside to be cut by the cutting part 13 to complete a label.

Detailed Description Text - DETX (87): In addition, since the edited items relating to color can be collectively automatically set also in the form input function (the color form function and the special color form function) taking account of the use of a label, the setting operation of a color set for a printed image can be simple.

US-PAT-NO: 6646649
DOCUMENT-IDENTIFIER: US 6646649 B1
TITLE: Image display device, electronic apparatus having same, and image display method
DATE-ISSUED: November 11, 2003
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanabe; Kenichi	Tokyo	N/A	N/A	JP
Ono; Hiroshi	Tokyo	N/A	N/A	JP
Konishi; Yoshiharu	Suwa	N/A	N/A	JP
Hayama; Hitoshi	Suwa	N/A	N/A	JP

US-CL-CURRENT: 345/588, 345/589 , 345/592 , 345/593 , 345/596 , 345/597

ABSTRACT: A monochrome display device easily and clearly distinguishes a multicolored character image from a multicolored background image by employing four gradations of monochrome. First and second monochrome gradations are assigned to any respective non-colored and colored elements of the background image and third and fourth monochrome gradations are assigned to any respective non-colored and colored elements of the character image to display a composite image of the background image and the character image.

8 Claims, 17 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

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Detailed Description Text - DETX (33): Referring to the accompanying drawings, the operating procedure and operation for preparing a label by means of the tape printing apparatus 1 will be described below.

Detailed Description Text - DETX (35): When only the line head mark shown in FIG. 6 is displayed, a process for inputting a character string "Fragile" to edit the character string in various ways to print the edited character string to prepare a label will be described in due order.

Detailed Description Text - DETX (39): As shown in FIG. 7, if the character string "Fragile" is inputted, the character string "Fragile", together with its printed image and label length (which will be hereinafter referred to as a "tape length"), which are arranged on the upper half thereof, is displayed on the display part 84.

Detailed Description Text - DETX (40): This printed image is displayed on the display part 84 by allowing data concerning the character string "Fragile" to be expanded for the printed image by means of the RAM 240 and outputting control signals to the liquid crystal driving circuit 283. On the other hand, the tape length is displayed as a value obtained by adding front and rear margins to a value which is calculated on the basis of the size of each of the characters of "Fragile", the number of the characters and the

character gap (i.e. distance between adjacent two of the characters). Furthermore, in the tape printing apparatus 1, the user can set the length of a label to prepare the label having a constant length (a constant-length printing). In this case, the set length is displayed as the tape length.

Detailed Description Text - DETX (43): Edited items will be briefly described below. As units for editing, there are three stages of formats, styles and modes. The formats relate to the whole label. Among the formats, one having no relation to color is called a sentence format, and one relating to color is called a color format. The styles relate to each part (which will be hereinafter referred to as a "paragraph"), which has, e.g., one or more characters wished to have different attributes even if the number of lines is different or the same and which is divided in a longitudinal direction of the label. Among the styles, one having no relation to color is called a paragraph style, and one relating to color is called a color style. The modes relate to each of characters. Among the modes, one having no relation to color is called a character mode, and one relating to color is called a color mode.

Detailed Description Text - DETX (44): Furthermore, the mode relating to each of characters can be designation (of the character string) of a paragraph or the whole label according to its designation. In addition, the style relating to each of paragraphs can be designation (of the character string) of the whole label according to its designation.

Detailed Description Text - DETX (45): The edited items belonging to the sentence format include (1) a ground tint attribute relating to the selection of the kind of a background pattern (a ground tint), (2) a ground tint pattern attribute relating to the size of a ground tint, (3) a constant-length printing attribute relating to the selection of a length in the constant-length printing, (4) a justification attribute relating to the arrangement of each of characters in the constant-length printed label (front justification, centering, equal space, rear justification), (5) a margin attribute relating to the amount of margins provided on the front and rear sides in longitudinal directions of a label, and so forth.

Detailed Description Text - DETX (49): The edited items belonging to the character mode includes (1) a vertical/horizontal attribute defining whether a character serving as an object should be vertically or horizontally written, (2) a Japanese character typeface attribute defining a Japanese character typeface for a character serving as an object, (3) an alphanumeric character typeface attribute defining an alphanumeric character typeface for a character serving as an object, (4) a decorative character attribute defining a modification for a character serving as an object (outline character, shadow character, italic character, highlighted character, etc.), (5) an expansion/contraction attribute defining whether a character serving as an object should be expanded or contracted from a basic character size on a line, to which the character belongs, (6) an arrangement attribute defining whether the expanded or contracted character should be arranged at the same position as, below or above the basic position on the line, (7) an enclosing/meshing attribute defining whether enclosing or half-tone dot meshing should be applied to a character serving as an object, (8) a character gap attribute defining a gap between a

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character serving as an object and the next character, (9) a pitch attribute defining whether the character gap should be automatically determined or fixed, and so forth.

Detailed Description Text - DETX (52): By editing in the color format editing mode, the color style editing mode and the color mode editing mode among these editing modes, it is possible to define the colors of characters, background and so forth on a label. Even if the printed result (the printed image) on the label is thus colored, the print image can not be colored since the display device of the tape printing apparatus 1 is the monochrome liquid crystal display. Therefore, the print image is provided by gradation (lightness).

Detailed Description Text - DETX (57): Furthermore, the tape printing apparatus 1 has a print image display function (a preview display function) of using and scrolling substantially the whole area of the display part 84 to display a printed image in accordance with the operation of a predetermined one of the function keys 320. The four-gradation assignment on the print image sole display screen based on the preview display function is shown in FIGS. 9A and 9B. The display of print image based on the preview display function provides a print image for the whole label by utilizing the scroll function. On the other hand, the print image on the input screen with print image fixedly provides a print image of part or whole label including a character, at which the cursor is positioned (there are some cases where a portion of a label displayed by the input of the character or the movement of the cursor moves).

Detailed Description Text - DETX (71): On the other hand, when the input screen before commanding the editing of the color format is the input screen with print image, the CPU 210 expands the inputted characters to a display region of inputted characters other than the display region of the print image (step ST5). Thereafter, the CPU 210 causes the set values (set colors) of the presently set edited items relating to the color format, as well as the set values (set colors) of the edited items relating to the color style and the color mode, to be reflected in the display region of the print image (naturally, the set values having no relation to color are also reflected), and expands the background image on the display conditions of FIG. 8A in accordance with the coloring or non-coloring of the edited items relating to the background group (step ST6). Moreover, the CPU 210 causes the set values (set colors) of the edited items relating to the color style and the color mode to be reflected in the display region of the print image (the edited items relating to the color format does not include the edited items belonging to the character color group, and the set values having no relation to color (e.g., character size) are naturally reflected), and expands the character image on the display gradation conditions of FIG. 8B in accordance with the coloring or non-coloring of the edited items relating to the character color group (step ST6). The image data thus expanded are supplied to the monochrome liquid crystal display, so that the input screen with print image is displayed on the display part 84.

Detailed Description Text - DETX (77): First, the tape printing apparatus 1 has a property display function of collectively or gradually displaying set value information (print information) based on the editing contents, on the display part 84 of the display screen 81 to allow the user to confirm the set value information based on the editing contents.

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Secondly, the tape printing apparatus 1 has a preview display function of simply allowing the user to confirm the print image for the whole label. Furthermore, since the display of the print image on the input screen with print image is not always intended for the whole label, the preview display function is effective.

Detailed Description Text - DETX (80): Then, the CPU 210 causes the set values (set colors) of the edited items relating to the color format, the color style and the color mode to be reflected in the whole label (the set values having no relation to color are also naturally reflected), and expands the background image on the display conditions of FIG. 9A in accordance with the coloring or non-coloring of the edited items relating to the background color group (step ST20). Moreover, the CPU 210 causes the set values (set colors) of the edited items relating to the color style and the color mode to be reflected in the whole label (the edited items relating to the color format do not include the edited items relating to the character color group, and the set values having no relation to color (e.g., character size) are naturally reflected), and expands the character image on the display gradation conditions of FIG. 9B in accordance with the coloring or non-coloring of the edited items relating to the character color group (step ST21).

Detailed Description Text - DETX (82): While such a scroll display is carried out, the CPU 210 monitors whether a predetermined one of the function keys 320 for stopping the scroll has been operated (step ST23) and whether the print image for the whole label has been provided by the scroll display (step ST24).

Detailed Description Text - DETX (84): On the other hand, after the print image for the whole label is completely provided by the scroll display, the CPU 210 waits for a predetermined period of time, or waits for the operation of an optional key, to return the display screen to the input screen (step ST27), and ends the preview display program 224. The returning to the input screen in this case is carried out in the same manner as that described above in detail in FIG. 11, if the input screen is the input screen with print image.

Detailed Description Text - DETX (86): After the editing contents and the print image for the whole label are confirmed by the property display function and the preview display function, the user operates the print key 321 to command print. At this time, a printed image (a composite image of the background image and the character image) reflecting the set values based on the editing is printed on the printed tape T1, and the laminate tape T2 is stuck on the printed part of the printed tape T1. Thereafter, the printed part of the tape T is discharged from the tape exit 10 to the outside to be cut by the cutting part 13 to complete a label.

4

US-PAT-NO: 5615123
DOCUMENT-IDENTIFIER: US 5615123 A
TITLE: System for creating and producing custom card products
DATE-ISSUED: March 25, 1997
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Davidson; Leonard	Los Angeles	CA	N/A	N/A
Russell; Matt	Glendale	CA	N/A	N/A
Allred; Scott	Riverside	CA	N/A	N/A
Russell; Michael S.	Glendale	CA	N/A	N/A

US-CL-CURRENT: 700/233, 493/458 , 84/602

ABSTRACT: A method of and apparatus for creating and producing printed card products such as greeting cards for various applications, whereby a customer can select a card product for a desired application and customize or personalize certain portions of the selected card product. A terminal area or kiosk is provided at which the customer selects from a monitor screen display one of a number of different general applications for which he/she wants to obtain a card product. Upon entry of the selection via, e.g., a transparent touch-sensitive plate on the monitor screen, one or more pre-stored groups of card product design formats pertaining to the selected general application are determined, and further inquiries are made via the monitor screen to elicit certain information relating to a specific use or application for the desired card product. Once this information is entered, certain ones of the determined card product design formats are identified as pertinent and are displayed to the customer who is then permitted to choose a card product format that he/she would like to customize. Further inquiries via the monitor screen elicit appropriate text to be reproduced at designated locations in the format of the chosen card product. The customized card product is then created by, e.g., a multi-color ink plotter that is fed with specially prepared sheets of card stock.
10 Claims,   50 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 39

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Abstract Text - ABTX (1): A method of and apparatus for creating and producing printed card products such as greeting cards for various applications, whereby a customer can select a card product for a desired application and customize or personalize certain portions of the selected card product. A terminal area or kiosk is provided at which the customer selects from a monitor screen display one of a number of different general applications for which he/she wants to obtain a card product. Upon entry of the selection via, e.g., a transparent touch-sensitive plate on the monitor screen, one or more pre-stored groups of card product design formats pertaining to the selected general application are determined, and further inquiries are made via the monitor screen to elicit certain information relating to a specific use or application for the desired card product. Once this information is entered, certain ones of the determined card product design formats are identified as pertinent and are displayed to the customer who is then permitted to

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choose a card product format that he/she would like to customize. Further inquiries via the monitor screen elicit appropriate text to be reproduced at designated locations in the format of the chosen card product. The customized card product is then created by, e.g., a multi-color ink plotter that is fed with specially prepared sheets of card stock.

Brief Summary Text - BSTX (37): According to the invention, a method of creating and producing printed card products for various applications, comprises the steps of allowing a customer at a terminal area to select one of a number of different general categories or occasions for a desired card product; providing a number of groups of card product design formats whereby each group includes card product design formats pertaining to one of said general categories or occasions, and each card product design format in the group has at least one of textual and graphic material; and determining which of said groups of card product design formats pertains to the general category or occasion selected by the customer. Each of the card product design formats in a determined group is distinguishable from others in the group according to certain information relating to an intended use or application for the desired card product. The method also includes eliciting said certain information from the customer after selection of a general category or occasion, and identifying which of the card product design formats in a determined group of formats pertaining to the selected general category or occasion, includes card product design formats conforming to the certain information elicited from the customer.

Detailed Description Text - DETX (3): As used herein, the terms "greeting card" and "card product" are meant to refer both to greeting cards generally such birthday, anniversary, graduation, various holiday cards and the like, and to any other kind of printed sheet, card or announcement including, but not limited to, invitations, thank-you cards, announcements of various kinds including new births, certificates, awards, personalized horoscopes, posters, plaques, game boards, charts, calendars, art work, stationery, signs, party paperware including place mats, bibs and name badges, bumper stickers, and any other printed item capable of being produced by feeding a sheet of paper stock or other recording medium into a reproducing device such as an ink plotter or printer.

Detailed Description Text - DETX (24): (5) As noted earlier, cards or other products that can be accommodated by the present system include, but are not limited to, customized greeting cards, invitations, awards, certificates, horoscopes, "For Sale" signs, bumper stickers and car signs, calendars, "special event" items, plaques, books, activity sheets, directional signs, party kits, stationery, business cards, note pads, address labels, legal forms and other printed materials.

Detailed Description Text - DETX (71): If the screen presents a choice of applications or categories, as shown starting in step 121 of FIG. 23, a category choice selected by the customer is saved in memory and a category counter is incremented. The specific category choice is contained in the action code element of the button definition and a certain next screen to display is identified. In the case of a "more" button selection as in FIG. 6 (button labeled "See More Relationships"), program step 122, the "more" button defines a new selection screen at the same level to display next such as the screen of FIG.

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7. That is, the screens of FIGS. 6 and 7 each relate to selection of the relationship of the recipient of a greeting card to the sender, after a selection of the occasion for the card has been made on a previous screen such as the screen of FIG. 5.

Detailed Description Text - DETX (79): After all the defined options including, e.g., the sender's name (FIG. 15), messages (FIG. 16), dates and/or optional graphics for the card have been entered by the customer, the card is then re-displayed on the monitor with all the customer entries and selections superimposed over the card in the proper locations, font and color for final customer approval. See, e.g., FIG. 17. Once the customer has verified the card for printing, another graphic may be presented to confirm the decision. A customer may operate the system for any length of time up to this point without incurring a charge, so a confirmation of printing is asked for in step 174.

US-PAT-NO: 5533176
DOCUMENT-IDENTIFIER: US 5533176 A
TITLE: Bar code identification system format editor
DATE-ISSUED: July 2, 1996
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Best; David J.	Miamisburg	OH	N/A	N/A
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US-CL-CURRENT: 358/1.18, 358/1.13

ABSTRACT: A bar code identification system format editor is shown which allows a single format to automatically be created for multiple, incompatible printers. The system includes a number of bar code printers of various types, each bar code printer type having an associated set of printer function options selectable by a user to define a format, i.e., the layout of fields for a tag, label or the like. When a user selects various printer types for which a format is to be generated, the format editor automatically determines the intersection of the sets of printer function options for each of the selected printer types to create a common set of printer function options. Thereafter, the format editor prompts the user to select only those printer function options supported by the selected printer types for the format as indicated in the common printer function option set. The format editor also allows a format to be created designated a nonfixed graphic so that one format can be used with a number of different graphics.

23 Claims,   11 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 11

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Brief Summary Text - BSTX (2): The present invention is directed to a bar code identification system format editor for generating and modifying formats for printing information on tags, labels or the like by a number of bar code printers of various, incompatible types; and more particularly to such a format editor for aiding a user in creating a single format for multiple incompatible printers and in creating a single format for a number of different graphics.

Brief Summary Text - BSTX (4): Bar code identification systems having a number of bar code printers are known for printing jobs that include bar codes and associated alphanumeric characters on a web of record members such as tags, labels and the like. Typically bar code printers can print jobs in a limited number of formats. The format of a tag or label defines the type of data field, i.e., bar code fields, alpha fields, numeric fields, etc.; the position of the fields on the tag/label; the font used to print alphanumeric fields if more than one font is available; magnification and rotation factors if any; etc. as is well known to those in the art of bar code identification systems. Printers of various types typically have different format options. Because of the differences in printer format

options, a job having a format capable of printing on one printer may not be able to print on a printer of a different type.

Brief Summary Text - BSTX (10): More particularly, the bar code identification system of the present invention utilizes a number of bar code printers of various types for printing on a web of record members such as tags, labels or the like. Each type of bar code printer has an associated set of printer function options selectable by a user to define a layout of fields for a record member. Each different printer type has an associated printer definition file for storing the set of printer function options for that printer type. When the user creates or modifies a format, the user selects the various printer types for which the format is to be generated. In response thereto, the format editor automatically determines the intersection of the sets of printer function options for the selected printer types in order to create a set of printer function options common to each of the selected printer types. Thereafter, the format editor prompts the user to select printer function options only from the common printer function option set so as to aid the user in defining a single record member layout for the selected plurality of printer types.

Detailed Description Text - DETX (5): In accordance with one feature of the present invention, a format can be created designating a fixed graphic or a nonfixed graphic. Two types of nonfixed graphics may be designated, a user enterable graphic and a database graphic. When a format is created with a fixed graphic, as described below, the same graphic, i.e., image or picture is generated each time the format is used. Fixed graphics may be used to print a company logo, for example, that does not vary from item-to-item for which tags or labels are to be printed in a given format. Nonfixed, user enterable and database graphics allow a single format to be created for multiple graphics. If a format is created specifying a user enterable graphic, at the time that the user is entering data to print a job in accordance with that format, the user is prompted to enter the name of a particular graphic to be printed. If a format is created specifying a database graphic, at the time that the user is entering data to print a job in accordance with that format, the user is prompted to enter a database record number or other key to allow the system to get the graphic name from a particular database and a particular field within the database both of which are identified when the format is created.

Detailed Description Text - DETX (6): At the time that a format is created designating that one of the three types of graphics is to be included, the user also enters information such as the location at which the graphic is to appear on a tag or label and various characteristics such as the size of the graphic. Other characteristics that may be specified if desired are the rotation of the graphic and encoding type such as hex or run length encoding types. The memory 20 stores an original bit map file of each graphic that can be generated. The bit map file for a graphic includes a bit map image of the graphic in a particular size and encoded a particular way. If a user specifies a graphic by name or identification in a size, and with the specified encoding type and rotation, for which a bit map file exists in the memory 20, a translation of the bit map file is not necessary. However, if the identified graphic does not have a bit map file in the designated size with the designated encoding type or rotation, the microprocessor 19 translates the original bit map file stored in the memory 20 to create a bit map file with the image of the graphic in

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the designated size with the designated rotation and of the designated encoding type. When a new bit map file is created, it is stored in the memory 20 so that it can be accessed for subsequent uses without requiring that the original bit map file be translated again.

Detailed Description Text - DETX (13): An on line section of the printer definition file contains parameters controlling the header parameters that are unique between on line support for the printer 10, 11, 12, 13 and off line support for the printer 10, 11, 12, 13. The field general section of the printer definition file includes parameters defining options that can apply both to bar code fields and text fields. These options include rotations, data formatting options, etc. The text section of the printer definition file includes options that apply only to text fields. Such options might designate character rotation, magnification and font support for example. The bar code section of the printer definition file contains a listing of all bar codes that are supported for the printer type including the bar code densities, minimum length, maximum length as well as the type of human readable characters that can be associated with the bar code. A line section of the printer definition file contains a listing of the kinds of lines that are supported by the printer type. More particularly, the minimum and maximum line widths are specified herein as well as the line angles supported, etc. The box section of the printer definition file contains a listing of the box support for the printer type including the minimum and maximum box widths, etc. The graphic section of the printer definition file contains a listing of the graphic support for the printer type. Finally, the translator section of the printer definition file contains the print driver support for the printer type. Once the printer definition files for each of the various printer types of the system are set up and stored in the memory 20, a user can generate a single format useable by a number of incompatible printers as discussed below.

Detailed Description Text - DETX (16): If the file menu option 64 was not selected, the microprocessor 19 proceeds to block 68 to determine whether the edit menu options were selected. If so, the microprocessor 19 proceeds to block 70 to process the edit menu options. The edit menu options include: (1) an add text option, (2) add bar code option, (3) add data option, (4) add line option, (5) add box option, (6) add graphic option, (7) delete option, (8) a modify edit option and (9) a reorder edit option. The edit menu options allow a user to add field parameters to a newly created format or to modify the field parameters of a previously created format. More particularly, the add text edit option allows a user to add a new text field to a given format. The add bar code edit option allows a user to add a new bar code field to a given format. The add data edit option allows a user to add a new data field to a given format and the add line edit option allows a user to add a new line field to the format. The add box edit option allows a user to add a new box field to the given format whereas the add graphic edit option allows a user to add a new graphic field to the format. More particularly, if the add graphic edit option is selected, the microprocessor 19 prompts the user via the display 18 to select a fixed, user enterable or database graphic for designation in the format. The user is also prompted for the characteristics of the graphic such as size, rotation and encoding type as well as the graphic's location on the tag or label to be printed in accordance with the format. If a user selects a database graphic, he is also prompted for the name of the

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database to be searched for the graphic name that is associated with the record number or key to be entered during operation of the data entry routine 24. At this time, the user is also prompted for the name of the database field in which the graphic name is to be found. The delete edit option allows the user to delete a field from a format. The modify edit option allows a user to change a previously defined field and the reorder edit option allows a user to change the order of fields in a format. If the microprocessor 19 determines at block 68 that an edit menu option has not been selected, the microprocessor proceeds to block 72.

Detailed Description Text - DETX (21): More particularly, upon entering the process file menu routine as depicted in FIG. 4A, the microprocessor 19 at block 84 determines whether the new menu option has been selected by a user in order to create a new format. If so, the microprocessor 19 proceeds to block 86 to prompt the user via the display 18 to enter a new format name. Thereafter, at block 88 the microprocessor 19 prompts the user via the display 18 to list the various printer types for which the format is to be created. The microprocessor 19 then continues to block 90 to implement the printer set up routine depicted in FIG. 5. in order to generate the common printer definition file for the multi-printer format being created.

Detailed Description Text - DETX (36): If the cost codes option is selected by the user as determined at block 72, the microprocessor 19 implements the process global cost code routine depicted in FIGS. 8A-B. At block 236 the microprocessor 19 determines whether a character input by the user via the keyboard is a character to be cost coded, i.e., encoded or translated so as to hide the nature of the character. If not, the microprocessor proceeds to block 240 to determine whether the input character is a character in a cost code name. If so, the microprocessor at block 242 determines whether the cost code name already exits and if it does, the microprocessor at block 244 displays the selected cost code translation scheme. If the microprocessor determines that the cost code name does not already exists, the microprocessor proceeds to block 246. At block 246 the microprocessor initializes the display 18 to depict two identical columns of characters representing the characters to be encoded. Upon determining that a character input by the user via the keyboard 16 is a cost code character the microprocessor proceeds from block 236 to block 238 to display the input character in one of the columns and the translation of the character in the other column wherein the original character and its encoded or translated value are in adjacent positions in the two displayed columns. As the user enters the cost coded characters as determined at block 236, the microprocessor 19 thus generates the cost code or translation scheme and displays the scheme to the user at block 238. If the microprocessor determines at block 248 that the user wants to add the defined scheme to the system, the microprocessor proceeds to block 250 to save the new cost code scheme for use by each of the printers 10, 11, 12 and 13. If the microprocessor determines at block 252 that the user wants to modify a current cost code scheme, at block 254 the microprocessor deletes the current cost code scheme and saves the new cost coded characters entered by the user under the same cost code name at block 256. At block 258 the microprocessor determines whether the user wants to delete the current cost code scheme, and if so the microprocessor at block 260 deletes the current scheme by erasing the scheme from memory. If the microprocessor determines at block 262 that

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the user is done processing the global cost code scheme, the microprocessor exits the Process Global Cost Code routine at block 264.

Detailed Description Text - DETX (38): More particularly, at the start of the Graphics Translator, the microprocessor 19 at a block 300 determines whether a GFX file exists for the identified graphic. If not, the microprocessor proceeds to block 308 to create a GFX file and thereafter proceeds to block 310. If a GFX file does exist as determined by the microprocessor at block 300, the microprocessor proceeds to block 302. At block 302 the microprocessor determines whether a bit map file of the graphic with the particular characteristics of the graphic specified in the format, i.e., size, encoding type and rotation, exists. If so, the microprocessor proceeds to block 304 to determine whether the original bit map file date is subsequent to the translated file date to ensure that the translated file reflects an updated original bit map file. If the original bit map file date is not subsequent to the translated file date, the microprocessor proceeds from block 304 to block 306 wherein the information for the appropriate translated bit map file is obtained from the GFX file so that the appropriate bit map file can be accessed in order to print a tag or label with the graphic in the format specified. If a translated bit map file does not exist for the specified graphic in the designated size, encoding type or rotation or if the original bit map file date is subsequent to the translated file date, the microprocessor 19 proceeds from respective blocks 302 or 304 to block 310. At block 310 the microprocessor 19 creates the translated bit map file of the graphic in the designated size, encoding type and rotation. At block 312, the microprocessor 19 stores the newly created bit map file in the memory 20 and further updates the GFX file for the graphic to reflect the addition of the newly translated bit map file.

Claims Text - CLTX (6): 3. A method of generating multi-printer formats as recited in claim 1 wherein said bar code identification system includes a memory for storing information and said method includes storing a record member layout when said format is defined, said layout including the size of said record member for which the format is created and the position of said fields on said record member; and maintaining the position of said fields constant relative to a predetermined position on said web of record members in response to a user change in the size of said web of record members to allow a user to change said size without changing said stored field positions.

Claims Text - CLTX (20): 11. A method of controlling a bar code identification system as recited in claim 9 wherein said translating step for a nonfixed graphic is performed independent of the definition of a format designating a nonfixed graphic to allow a user to create a single format for a plurality of graphics.

Claims Text - CLTX (32): 17. A method of controlling a bar code identification system as recited in claim 15 wherein said designated characteristic includes the rotation of the graphic.

Claims Text - CLTX (35): 20. A method of controlling a bar code identification system as recited in claim 19 wherein said translating step for a nonfixed graphic is performed

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independent of the definition of a format designating a nonfixed graphic to allow a user to create a single format for a plurality of graphics.

US-PAT-NO: 5448685
DOCUMENT-IDENTIFIER: US 5448685 A
TITLE: Label printing apparatus and wordprocessor
DATE-ISSUED: September 5, 1995
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Takeuchi; Yasuo	Suwa	N/A	N/A	JP
Okimura; Kimihiko	Suwa	N/A	N/A	JP
Yoshida, deceased; Hiroshi	late of Shiojiri	N/A	N/A	JP
Kobayashi; Atsushi	Suwa	N/A	N/A	JP
Ogura; Noboru	Suwa	N/A	N/A	JP
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US-CL-CURRENT: 358/1.18, 358/1.2 , 358/1.9 , 715/508

ABSTRACT: A label printing apparatus includes a liquid crystal display unit for displaying an input character string and a message corresponding to each operation stage, a printing unit for printing a character string on each label, a storage unit for storing each data, and a CPU for performing each processing and control. Label information specifying sizes and the like of various types of labels, sheet numbers corresponding to the label information, character size information defining character sizes, and the like are stored in the storage unit. The CPU specifies label information corresponding to the sheet number and selects a maximum printable character size from a character size table as an initial value on the basis of a printing area. The character size is changed so that the horizontal length of an input character string falls within the printing area. The character size is further changed so that all the characters of the character string extending in all the lines fall within the printing area. An optimal character size is finally selected, and actual printing is performed on each label using this character size.
56 Claims,   96 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 63

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Abstract Text - ABTX (1): A label printing apparatus includes a liquid crystal display unit for displaying an input character string and a message corresponding to each operation stage, a printing unit for printing a character string on each label, a storage unit for storing each data, and a CPU for performing each processing and control. Label information specifying sizes and the like of various types of labels, sheet numbers corresponding to the label information, character size information defining character sizes, and the like are stored in the storage unit. The CPU specifies label information corresponding to the sheet number and selects a maximum printable character size from a character size table as an initial value on the basis of a printing area. The character size is changed so that the horizontal length of an input character string falls within the printing

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area. The character size is further changed so that all the characters of the character string extending in all the lines fall within the printing area. An optimal character size is finally selected, and actual printing is performed on each label using this character size.

TITLE - TI (1): Label printing apparatus and wordprocessor

Brief Summary Text - BSTX (3): The present invention mainly relates to a label printing apparatus for printing information on a label sheet on which a large number of labels having the standardized layout and shape, and the like are adhered.

Brief Summary Text - BSTX (6): In order to solve the above problems, there is provided a printing apparatus capable of efficiently printing the same contents at the upper and lower positions of a ruled label by properly selecting a printing direction (Japanese Utility Model Laid-Open No. 1-178,948).

Brief Summary Text - BSTX (7): There is also provided a label printing apparatus for setting an input character count and an input line count to fall within one label and calculating a label count as an integer on one label sheet (Japanese Patent Laid-Open No. 61-175722).

Brief Summary Text - BSTX (8): There is further provided a label printer for automatically calculating a character size to a full-height, full-width size or a full-height, half-width size, so that characters can be printed within a predetermined label width (Japanese Patent Laid-Open No. 63-189276).

Brief Summary Text - BSTX (9): There is further provided a label printer capable of inputting a printing format of a label as a single slip and printing information on labels having different sizes (Japanese Patent Laid-Open No. 62-158072).

Brief Summary Text - BSTX (10): In the device of Japanese Utility Model Laid-Open No. 1-178948, processing for properly printing information on one index label is described in detail, but no description is made for an operation for detecting the positions and sizes of a plurality of index labels and a control method of printing information on each label.

Brief Summary Text - BSTX (11): The prior arts described in Japanese Patent Laid-Open Nos. 61-175722, 63-189276, and 62-158072 are associated with the way of properly printing information on one label, but not with the way of printing information on a large number of labels arranged on a label sheet.

Brief Summary Text - BSTX (12): In a conventional label printing apparatus, information is printed on each individual label with a character size designated beforehand. However, since the kinds of labels are several hundreds, the character size must be selected in accordance with the size of each individual label. In addition, the character size must be changed in accordance with the character count and line count of characters to be printed.

An operation for setting these conditions is so cumbersome as to perform printing in accordance with the desired layout of a user.

Brief Summary Text - BSTX (14): It is an object of the present invention to provide a label printing apparatus capable of printing a character string in a proper state on a large number of labels adhered on a label sheet.

Brief Summary Text - BSTX (15): It is another object of the present invention to provide a label printing apparatus capable of eliminating cumbersome character size setup required for properly performing printing on a desired label.

Brief Summary Text - BSTX (16): According to an aspect of the present invention, there is provided a label printing apparatus for inputting a desired character string with keys and printing the input character string in units of labels arranged on a label sheet, comprising a storage means and a processing means.

Brief Summary Text - BSTX (20): a second processing means for discriminating a printing area of the label from the specified label information, comparing a vertical length of the printing area with a horizontal length of the printing area to determine a smaller one of the vertical and horizontal lengths as a reference length, and selecting a maximum character size falling within a square area having one end as the reference length from the character size information;

Brief Summary Text - BSTX (22): a fourth processing means for always comparing the horizontal length of the generated character string with the horizontal length of the printing area of the label, selecting a character size smaller than a character size of the character string from the character size information when the horizontal length of the character string is larger than that of the printing area, and changing all character sizes to this small character size.

Brief Summary Text - BSTX (24): the fourth processing means can select a character size smaller than a character size of the character string and change the character sizes of all lines to this small character size when the fourth processing means always compares the horizontal length of the generated character string with the horizontal length of the printing area of the label in units of lines, and a line in which the horizontal length of the character string is larger than that of the printing area is present.

Brief Summary Text - BSTX (26): The fifth processing means adds the vertical lengths of the character sizes determined by the fourth processing means to obtain an overall length of all the lines, compares the overall length with the vertical length of the printing area of the label, selects a character size smaller than the character string when the overall length is larger than the vertical length of the printing area, and changes the character sizes of all the lines to this selected small character size.

Brief Summary Text - BSTX (27): The label sheet used in the label printing apparatus having the above arrangement basically has standard vertical and horizontal lengths of

labels arranged on the label sheet and standard layout positions of labels on the sheet in accordance with the type of label sheet. Identification codes are assigned to the standards, respectively.

Drawing Description Text - DRTX (2): FIG. 1 is a perspective view showing the outer appearance of a label printing apparatus according to the present invention;

Drawing Description Text - DRTX (3): FIG. 2 is a perspective view showing the internal mechanism of the label printing apparatus;

Drawing Description Text - DRTX (4): FIG. 3 is a perspective view showing the internal mechanism of the label printing apparatus;

Drawing Description Text - DRTX (5): FIG. 4 is a plan view showing the key layout of the label printing apparatus;

Drawing Description Text - DRTX (7): FIG. 6 is a control block diagram of the label printing apparatus;

Drawing Description Text - DRTX (14): FIG. 13 is a schematic plan view for explaining the relationship between lengths (e.g., a character spacing and a line spacing) of the respective portions of a label subjected to printing and the symbols representing these portions;

Drawing Description Text - DRTX (33): FIG. 32 is a flow chart showing input processing of a character string to be printed on a tack index label;

Drawing Description Text - DRTX (34): FIG. 33 is a flow chart showing input processing of the character string printed on the tack index label;

Drawing Description Text - DRTX (36): FIG. 35 is a flow chart showing input processing of a character string to be printed on a cassette label;

Drawing Description Text - DRTX (38): FIG. 37 is a flow chart showing label sheet feed control in printing processing;

Drawing Description Text - DRTX (43): FIG. 42 is a flow chart showing initial setup when printing is continuously performed on the printed label sheet;

Detailed Description Text - DETX (4): FIGS. 1 to 4 show the outer appearance and the internal mechanism of a label printing apparatus 1. The label printing apparatus (to be referred to as an apparatus thereinafter) 1 is an apparatus for performing printing on a large number of labels 4a regularly arranged on a label sheet 4. The apparatus 1 comprises an upper half 2 and a lower half 3. An insertion port 5 for the label sheet 4 is formed between the upper and lower halves 2 and 3.

Detailed Description Text - DETX (11): The control block diagram of the label printing apparatus will be described with reference to FIG. 6.

Detailed Description Text - DETX (14): The CPU 30 has an internal counter for counting the number of sheets and a timer for synchronizing sheet feeding. The CPU 30 receives input information from a key input unit 6' and a detection signal from the sheet sensor 19, outputs control signals to the corresponding circuit sections, and systematically controls a character input, character editing, selection of the type of label sheet, display operations, and printing operations (to be described later).

Detailed Description Text - DETX (17): Table 1 shows character sizes ranging from the SS size to the 3L size. The types of printable label sheets are of several hundreds in the label printing apparatus of this type. A large number of character sizes subjected to printing are required. The horizontally elongated characters and the vertically elongated characters can be designated in addition to the square characters. In this manner, the selection jobs can be facilitated by selecting character sizes using size classification symbols.

Detailed Description Text - DETX (18): Various shapes of label sheets for a general quadrangular label, a ruled label, a tack index label, a box label, and a cassette label are available. In addition, there are various adhesion positions on label sheets, which are respectively standardized. Referring to FIG. 6, an external input/output device such as an extension cartridge represented as an auxiliary storage unit 40 is connected to the apparatus in FIG. 6. It is possible to register new types of label sheets and non-standard formats when the types of label sheets are to be increased, or printing is to be performed on a desired non-standard label sheet.

Detailed Description Text - DETX (20): The sheet number is selected by inputting an identification code consisting of one character or two characters (including a number), thereby facilitating the selection job. A table (not shown) in which sheet numbers are stored in this embodiment represents sheet numbers as label sizes. The table stores sizes with reference to the corner position as the leading end of the left side of the label sheet 4 which is detected by the sheet sensor 19. The sizes are determined by data required to specify label positions on a label sheet from the horizontal and vertical lengths of a label sheet, the shape of a label, the vertical and horizontal lengths of a label, vertical and horizontal intervals between the labels, and the number of labels on one label sheet. If only position data of the printing start point with reference to the front end of the left side of the label sheet is used in place of the above lengths and intervals, the memory capacity can be reduced. The sizes are designated in units of millimeters (mm). In this embodiment, the sizes are coded to reduce the memory capacity. The CPU 30 calculates a printing position, i.e., the label position on the basis of the stored size data of the designated sheet number (identification code) to be described later.

Detailed Description Text - DETX (21): The table which stores the sheet numbers includes cut sizes. The cut sizes define blank sizes of the peripheral label portions which are not subjected to printing. First, a system for actually measuring a label position and

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performing printing is not employed, but a simple system for controlling all positions with reference to the corner position of the label sheet is employed. Information can be property printed within each label even if a small feed error of the sheet by the paper feed rollers 8 and the like occurs. Second, the same effect as described above can be obtained when the label size is stored in a size slightly smaller than the actual size. In this case, an image character (on the screen) does not coincide with the actually printed character, resulting in inconvenience.

Detailed Description Text - DETX (26): When the selection menu of "label formation" is selected and the above initialization is completed, selection menus of "new formation" and "continuation" are displayed on the screen (#14). The CPU 30 determines which selection menu is selected and designated (#16). If the selection menu of "continuation" is selected, the contents of the previous work are displayed on the screen (#18). If a character string has already been formed, a sheet number or the like is displayed. If a post card has already been formed, a message indicating this is displayed. When the "execution" key is depressed (#20), the previous work screen is displayed, so that the user can input a character (#22). In this manner, since the previous work contents are stored in the RAM of the storage unit 31, the interrupted work can be easily restarted.

Detailed Description Text - DETX (27): On the other hand, when the selection menu of "new formation" is selected ("YES" in #16), the screen is switched to a screen for designating a label sheet so as to form a new character string (#24). When a desired sheet number (identification code) is input ("YES" in #26), the CPU determines whether this sheet number is present in the table in the ROM in the storage unit 31 (#28). If the designated sheet number is present, the screen is switched to a character input screen (#30). If not, a message such as "This sheet is not registered" is displayed for three seconds, and the previous designation screen (#24) is restored.

Detailed Description Text - DETX (30): After the initial conditions are set as described above, a desired character string is formed on the character input screen. In this apparatus 1, the character size is automatically set in accordance with the numbers of characters and lines of an input character string. Automatic setup of this character size is to automatically set the size of characters which can be properly printed within the label in accordance with the character string input on the character input screen. The character size is selected from those in Table 1.

Detailed Description Text - DETX (32): The initial value of the character size is set. In the initial setup described above, a label to be used is specified (#102), and a printing area in the label is determined on the basis of this label information. The vertical length of the printing area is compared with the horizontal length of the printing area (#104). By this comparison, the shorter length is selected. If the horizontal length is smaller than the vertical length, as shown in FIG. 11A, a square area S having the horizontal length l as one side is assumed (#106). However, when the vertical size is shorter than the horizontal size, as shown in FIG. 11B, a square area S having the vertical length l as one side is assumed (#108). The character size corresponding to the character size of a maximum

square character falling within the square area S is selected from Table 1. The selected character size is set as the initial value (#110).

Detailed Description Text - DETX (33): After the initial value of the character size is determined, the CPU 30 waits for a character (including a symbol and the like) input. Every time the number of input characters is increased or decreased by one, the horizontal length of the formed character string is calculated. When the character string extends in a plurality of lines, the horizontal length of each line is calculated (#202). The horizontal length of the character string is compared with the horizontal length of the set printing area in units of lines to determine whether the formed character string can be printed within the horizontal length of the set label (#204). If the horizontal length of the character string is larger than the horizontal length of the printing area, a character size smaller than the set character size by one size is selected from Table 1. The character sizes of all the lines are changed to this new character size (#206). Thereafter, the operations in #202 and #204 are repeated. In this manner, an appropriate character size is determined with reference to the horizontal length of each line of the character string and the horizontal length of the printing area.

Detailed Description Text - DETX (40): Automatic character spacing setup will be described with reference to a flow chart in FIG. 12. Symbols used in this flow chart are defined below with reference to FIG. 13. FIG. 13 shows one label 4a on which characters having different sizes are printed in hatched portions.

Detailed Description Text - DETX (53): Processing for equally assigning the character spacing in #306 to #314 and processing for equally assigning the line spacing in #318 to #326 are performed every time a key input representing an end of character editing for one label is detected, i.e., every time the "print" key is depressed, every time a key for displaying an image of the layout of input characters is depressed during editing, or every time an operation for registering the formed character string is performed.

Detailed Description Text - DETX (54): An apparatus 1 shown in this embodiment can perform printing even on a non-standardized label sheet if this sheet can be physically inserted from an insertion port 5. If label information is accurately registered, the character size can be automatically set on a free-size label sheet (printing sheet), the label information (e.g., a label sheet size) of which is set and registered by the user himself, in accordance with the flow chart.

Detailed Description Text - DETX (61): A CPU 30 determines whether input characters can be printed within the vertical length of the printing area of a label currently designated.

Detailed Description Text - DETX (76): A quadrangle having the readout vertical and horizontal lengths as two adjacent sides is displayed at the central right portion of the liquid crystal display unit 7 (#602). The selection screen for selecting the shape of a target character string from the square character, the flattened character, and the condensed character is displayed at the upper left portion of the liquid crystal display unit

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7, and a selection screen for selecting a character size ranging from SS to 3L is displayed at the lower left portion of the liquid crystal display unit 7. The quadrangle displayed in #602 indicates the character size of a character string to be printed on a label. However, the display position may be slightly shifted from the printing position due to the difference between the dot pitches of the printing unit 20 and the liquid crystal display unit 7.

Detailed Description Text - DETX (78): The display contents of the liquid crystal display unit 7 in the above change processing are shown in FIGS. 20A to 22E. FIGS. 20A to 20F show a change in character size when a character string to be printed is a square shape. FIG. 20A shows a case in which a character having a size of "3L" is designated. In this case, "3L" is displayed at the central right portion of the liquid crystal display unit 7, and a quadrangle representing the square frame of the character size is displayed. This quadrangle indicates the actual size when a character is printed on a label. FIG. 20B shows a case in which a character having a size of "LL" is designated. FIGS. 20C to 20F show cases in which characters having sizes of "L" to "SS" are designated, respectively.

Detailed Description Text - DETX (83): In a conventional label printing apparatus, an input character string is displayed on the display, so that user can confirm whether the input is correctly performed. However, the user cannot know how the input character string is printed on the label until it is actually printed. For this reason, a character string must be printed on labels several times to check whether a desired label is formed.

Detailed Description Text - DETX (84): In a label printing apparatus according to the present invention, the image of each character to be printed on a label is displayed (image display means).

Detailed Description Text - DETX (85): This image display processing will be described with reference to flow charts in FIGS. 23 to 26 and conceptual views of FIGS. 27A to 31C. In this processing, the user inputs a sheet number of a label sheet on which printing is to be performed (#701). In a character string input enable state or a state wherein an image is already displayed, when the user depresses keys (shift key+H key) for image display (#702), a CPU 30 determines whether the character is already input (#703). If "NO" in #703, an image cannot be displayed, and the key input operation for image display is invalidated, and the flow returns to #702. When a character is already input, the vertical and horizontal lengths of the label corresponding to the sheet number input in #701 are read out from a list table 31a of a storage unit 31 (#706; FIG. 28B). The list table 31a store the vertical and horizontal lengths of a plurality of labels in mm. Of the readout lengths, a reduction magnification corresponding to the long side is extracted from a reduction table 31b in the storage unit 31 (#707; FIGS. 28B and 28C). The reduction table 31b is a table of correspondence between a plurality of reference size data (1 mm, 64 mm, 95 mm, . . .) and reduction magnifications (4 times, 6 times, 8 times, . . .), and the reduction magnification corresponding to the largest reference length smaller than the long side is selected from the reference sizes. The label represented by the reduction table 31b is changed to a size displayable within the screen of a liquid crystal display unit 7. The vertical and horizontal lengths read out in #706 are reduced in

accordance with the reduction magnification to obtain reduction data (#708). In this reduction processing, the unit of the vertical and horizontal lengths is changed from millimeters (mm) to a dot count (FIG. 27A). The converted values are divided by the reduction magnification, thereby obtaining the actual display size (FIG. 27B). Data obtained by extracting one dot at each corner is given as outer frame data on the basis of a quadrangular frame obtained by the reduction data (FIG. 27C). If the label is an index label (#709), a printing disable area is set at the center of the outer frame data (#710; FIG. 27D). The outer frame data thus formed is set in the work area in the storage unit 31 (#711).

Detailed Description Text - DETX (88): The actual dot counts obtained as described above are divided by the reduction magnification extracted in #707 to obtain reduction distance data representing the relative positions on the outer frame data formed in #708 (#726; FIG. 30C). Similarly, the character size of the extracted character is divided by the reduction magnification to obtain a reduction character size having the same magnification as that of the outer frame data (#727; FIG. 31A). If the character code of this extracted character does not represent a space (#728), a dot pattern representing this extracted character is written in the outer frame data set in the work area of the storage unit 31 (#729; FIG. 31B). More specifically, a quadrangle designated by the reduction character size is set at the relative positions on the outer frame data represented by the reduction distance data. In addition, the interior of the quadrangle is filled with dots, thereby forming a dot pattern. Processing in #712 to #729 is performed for all input characters (#730).

Detailed Description Text - DETX (101): In the label printing apparatus of this embodiment, an image of a label having any size can always be displayed as a reduced image falling within the longitudinal size of the liquid crystal display unit. For this reason, printed images of all labels can be visually grasped without actually printing information on the labels.

Detailed Description Text - DETX (103): A conventional label printing apparatus can print information on a label having a plurality of input columns, such as a tack index label or cassette label. In this case, the cursor must be manually shifted to each input column on the label after the user recognizes the positions and sizes of the input columns, resulting in cumbersome operations.

Detailed Description Text - DETX (104): To the contrary, a label printing apparatus of this embodiment can easily execute input processing on a label having a plurality of input columns, such as a tack index label or cassette label.

Detailed Description Text - DETX (105): Input processing for character strings to be printed on a tack index label and a cassette label will be described with reference to FIG. 32 to 36B.

Detailed Description Text - DETX (106): FIGS. 32 and 33 are flow charts showing input processing for a character string to be printed on a tack index label.

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Detailed Description Text - DETX (107): The sheet number assigned to the index sheet is input to specify all pieces of information such as the vertical and horizontal lengths and layout positions of the tack index labels (#800). A printing pattern selection screen as an input screen for the tack index label is displayed (#801). This selection screen consists of six types of label patterns 51 to 56 shown in FIG. 34. The label patterns 51 to 53 are patterns each for printing identical character strings in two printing areas (columns), while the label patterns 54 to 56 are patterns each for printing different character strings in two printing areas. When the user shifts the cursor to designate a desired label pattern (#802), the screen for designating the editing screen is displayed (#803). The editing screen includes an A-side editing screen and a B-side editing screen. The A side indicates the upper printing area of the tack index label, and the B side indicates the lower printing area of the tack index label. On this designation screen, when the user designates the A-side editing screen (#805), the A-side editing screen is displayed (#806). On the other hand, when the user designates the B-side editing screen (#805), the B-side editing screen is displayed (#807). However, when the label patterns 51 to 53 are designated on the printing pattern selection screen, the B-side editing screen cannot be designated because a character string input on the A-side editing screen is copied to the B side.

Detailed Description Text - DETX (108): On these editing screens, editing operations for character strings to be printed on a label are performed. In the editing operations, even if a character string is to be printed upside down, the screen is displayed in an erected state. To restore the editing screen selection processing from the editing operation, the cursor is shifted upward. Upon shift of the cursor, the display is switched from the editing screen to the designation screen (#809 and #803). Thereafter, processing from #804 is continuously performed. When the cursor is further moved upward, the designation screen is switched to the printing pattern selection screen (#810 and #801). Thereafter, processing from #802 is continuously performed.

Detailed Description Text - DETX (110): FIG. 35 is a flow chart showing processing for inputting a character string to be printed on a cassette label.

Detailed Description Text - DETX (111): When a sheet number assigned to a cassette sheet is input, all pieces of information such as the vertical and horizontal lengths and layout position of the cassette labels are designated (#820). A selection screen as a cassette label input screen is displayed (#821). This selection screen has three choices 61 to 63 (album title formation, A-side formation, and B-side formation), as shown in FIG. 35A. The choice 61 of these choices is a choice for inputting a character string to be printed in an album title column 71 of a cassette label 70 shown in FIG. 36B. Similarly, the choices 62 and 63 are choices for inputting character strings to be printed in A-side song title columns 72 and B-side song title columns 73, respectively. Of these choices, when the "album title formation" choice 61 is selected (#822), the album title editing screen is displayed (#823). When the "A-side formation" choice 62 is selected (#822), the A-side editing screen is displayed (#824). When the "B-side formation" choice 63 is selected (#822), the B-side editing screen is displayed (#825). The user edits the character strings to be printed on the label on these editing screens. To restore the selection screen

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from the editing operation, the cursor is shifted upward. Upon shift of the cursor, the editing screen is switched to the selection screen (#821). Thereafter, processing from #822 is continuously performed. When the editing operation in #823, #824, or #825 is completed (#826), the edited character strings are stored in a predetermined area of the storage unit 31 (#827). Thereafter, the flow returns to #821, and processing continues.

Detailed Description Text - DETX (112): Since the character strings to be printed can be input to the corresponding columns of the label, selection errors can be minimized, and the label can be quickly formed.

Detailed Description Text - DETX (114): The character strings to be printed are formed as described with reference to the above embodiments. The formed character strings are stored as character string information in a storage unit 31. Under the control of a CPU 30, printing is performed on labels arranged on a label sheet on the basis of the stored data and the preset label information.

Detailed Description Text - DETX (115): In execution of this printing processing, an apparatus 1 detects only a corner portion as the leading end of the left side of a label sheet and controls various printing operations with reference to this position.

Detailed Description Text - DETX (116): Label sheet feed control in the printing processing will be described with reference to FIGS. 37 and 38.

Detailed Description Text - DETX (117): Assume that a character input operation is completed, that the registered character strings are loaded, that the "print" key is depressed, and that various setup operations are completed. A message such as "Please insert a sheet" to prompt insertion of a label sheet is displayed on a liquid crystal display unit 7 (#902). The user brings the left side of a label sheet 4 into contact with a side wall 18 and inserts the label sheet from an insertion port 5. The label sheet 4 is inserted until the leading end of a label sheet A (FIG. 38) is brought into contact with a pair of paper feed rollers 8. In this state, the label sheet A is completely set. When the user depresses the "execution" key ("YES" in #904), a sheet feed motor 16 is driven (#906), and the paper feed rollers 8 are rotated upon rotation of the sheet feed motor 16. Feeding of the set label sheet A is started toward a printing unit 20.

Detailed Description Text - DETX (120): In the apparatus 1, the label information which specifies the shape of the label and the layout positions of the labels is stored with reference to the corner position as the leading end of the left side of the label sheet. Since the printing processing is executed on the basis of this label information, it is very important to detect whether the corner position of the label sheet is accurately set at the prescribed position.

Detailed Description Text - DETX (123): In printing processing, a so-called skip position may be designated such that printing is not performed on a specific label in consideration of some handwritten labels of all the labels arranged on a label sheet.

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Detailed Description Text - DETX (125): FIG. 39 shows the relationship between a label sheet and labels. A large number of labels 4a having the same size are adhered on a label sheet to be spaced apart from each other at predetermined intervals in the x and y directions. Coordinates (x,y) as position codes are assigned to these labels 4a such that 1, 2, . . . , N are assigned in the x direction and 1, 2, . . . , M are assigned in y direction.

Detailed Description Text - DETX (126): After the number of labels to be printed is designated, the first label subjected to printing is designated from the large number of labels arranged on the label sheet. Note that M represents the number of labels arranged in the y direction (horizontal direction) and N represents the number of labels arranged in the x direction (vertical direction) (FIG. 39).

Detailed Description Text - DETX (127): Since the types of label sheets are specified by the previous setup operations, the number of labels arranged on a label sheet is determined on the basis of this label information. If the label sheet is determined as a label sheet having a plurality of labels ("NO" in #1002, or "YES" in #1002 and "NO" in #1004), a screen for setting the printing start position is displayed (#1006). A printing start position is input on this setup screen (#1008). This input operation is performed by inputting the coordinate position of the first label subjected to printing because the labels arranged on the label sheet are assigned with coordinates. As characters input by the users, letters A, B, C, . . . are assigned in the x direction, and numbers 1, 2, 3, . . . are assigned in the y direction (FIG. 7). For example, to start printing from the label at the coordinate position (1,2), "A-2" is input, and to start printing from the label at the coordinate position (2,1), "B-1" is input. When an unused label sheet is set, "A-1" is always set as the initial value representing the printing start position. This coordinate position is displayed on the setup screen. To start printing from this position, the user simply depresses the "execution" key, and this position is input as the printing start position. The input coordinate position is stored as a start position (Xs,Ys).sub.1 (#1010).

Detailed Description Text - DETX (128): A screen for setting the position of a label, free from printing processing, i.e., the skip position, of all the labels arranged on the label sheet is displayed (#1012). The user inputs the skip position on this setup screen (#1014). This input operation is performed by inputting the coordinate position of the corresponding label as in the input operation of the printing start position. After the coordinate position of one skip position is input, this coordinate position is stored (#1016). If an additional skip position is present ("NO" in #1018), processing in #1014 to #1018 is repeated until all the skip positions are designated.

Detailed Description Text - DETX (130): On the other hand, if the set label sheet has only one label ("YES" in #1002 and "YES" in #1004), the printing start position and the skip position need not be specified, and the setup operation is immediately ended.

Detailed Description Text - DETX (132): The coordinate position (Xs,Ys).sub.1 as the printing start position designated by the above setup operation is set to (x,y) (#1102) to determine whether the coordinate position (x,y) is designated as a skip position (#1004). If any skip position is not designated ("NO" in #1104), printing data representing a

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character string to be printed is set in a memory area corresponding to the position (x,y). If a plurality of labels to be printed are set ("NO" in #1108), y of the coordinate position (x,y) is set to y+1 in #1110. Control is shifted to a label arranged to the right of the label at the start position, and processing in #1104 to #1112 is repeated. In this manner, printing data to be printed are sequentially set in memory areas corresponding to the respective coordinate positions.

Detailed Description Text - DETX (133): When y is set to y+1 in #1110, and the actual horizontal label count exceeds a horizontal label count M ("NO" in #1112), a CPU 30 determines that the printing data are already set for a row of labels arranged on the label sheet. In this case, y is set to 1 (#1114) and the x is set to x+1 (#1116), so that control is shifted to the next row. At the same time, the position of the left end label of this line (row) is stored as a new printing start position (Xs,Ys).sub.2 (#1118). When the x is set to x+1 in #1116 and the actual vertical label count exceeds a vertical label count N ("NO" in #1120), the CPU 30 determines that printing setup of all the labels arranged on this label sheet is completed. In this case, since y is already set to 1, x is set to 1 in #1122, so that the printing start position (Xs,Ys).sub.2 is updated to a new label sheet position (1,1).

Detailed Description Text - DETX (134): In this manner, after the next printing start coordinate position is stored, printing processing of a row of labels is performed on the basis of the currently set printing data (#1124). In the apparatus 1, the labels arranged on the label sheet are processed in units of rows, and printing processing is sequentially performed.

Detailed Description Text - DETX (135): When printing processing of a row of labels is completed, and then printing of all the designated labels is completed ("YES" in #1126), the printing processing is completed. However, when the number of printed labels is not equal to the number of labels to be printed ("NO" in #1126), the CPU 30 determines in #1118 whether the printing start position (Xs,Ys).sub.2 is set to (1,1), i.e., whether printing processing is performed on all the labels arranged on this label sheet. If a non-printed label is present on the label sheet ("NO" in #1128), processing from #1102 is repeated on the basis of the updated printing start position (Xs,Ys).sub.2. If the CPU 30 determines in #1128 that all the labels arranged on the label sheet are printed ("YES" in #1128), a message for prompting insertion of a new label sheet is displayed on a liquid crystal display unit 7. At the same time, printing processing for the new label sheet continues (#1130).

Detailed Description Text - DETX (136): On the other hand, when the printing data is set for the position (x,y) in #1106, and the CPU 30 determines that the printing data are set for all the designated labels ("YES" in #1108), y of the coordinate position (x,y) is set to y+1 in #1132. Since the coordinate position of the label to the right of the label to which the printing data serves as the next printing start position, the coordinate position is updated to this coordinate position in #1118. The updated coordinate position is stored. Thereafter, printing processing of a row of labels to which the current printing data is set is performed (#1124). Printing is performed on all the designated labels ("YES" in #1126), and the printing processing is completed.

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Detailed Description Text - DETX (137): When y is set to y+1 in #1132, and the actual horizontal label count exceeds the horizontal label count M ("NO" in #1134), the CPU 30 determines that the printing data are already set for a row of labels arranged on this label sheet. The coordinate position of a label located at the left end of the next line is set as the next printing start position (#1136 and #1138). When x is set to x+1 in #1138, and the actual vertical label count exceeds the vertical label count N ("NO" in #1140), the CPU 30 determines that printing setup of all the labels arranged on this label sheet is completed. In this case, the printing start position $(Xs, Ys).sub.2$ is set to a new label sheet position $(1,1)$ (#1142 and #1118).

Detailed Description Text - DETX (139): Initial setup processing for the next printing processing using the label sheet, some labels of which are already used, will be described with reference to a flow chart in FIG. 42.

Detailed Description Text - DETX (140): When a power switch 6a is turned on, hardware initialization is performed. When the user selects "label formation", two selection menus of "new formation" and "continuation" are displayed on the screen (#1202).

Detailed Description Text - DETX (144): This embodiment exemplifies a case in which the printing start position and the like are set for a label sheet having plural arrays of labels arranged in the x and y directions. However, when setup data are to be set for a label sheet having one array of labels in only the x or y direction, a setup screen for designating only one of the coordinates such as "A-" or "-1" is displayed on the liquid crystal display unit 7.

Detailed Description Text - DETX (145): Since the apparatus 1 has the above function, a position at which no label is present can be input and designated beforehand in printing of a label sheet having some handwritten labels, an expensive sensor or the like for detecting the presence/absence of a label need not be arranged, and unnecessary portions can be accurately specified. In addition, when printing is to be restarted on a label sheet, some labels of which are already used, the user need not designate the printing start position, thereby minimizing the cumbersome operation performed by the user.

Detailed Description Text - DETX (162): FIG. 51A shows the shape of a cassette label, and FIG. 51B shows the shape of the album title printing range of this cassette label. Referring to FIG. 51A, both "J" and "K" are set on the cassette label.

Detailed Description Text - DETX (165): In this embodiment, if registration files have different label attributes in the comparison in #1366, these registration files are eliminated from the objects to be retrieved. For this reason, retrieval processing can be performed at high speed. In this manner, the registration files having different label attributes are eliminated from the objects to be retrieval because labels having different label attributes have different shapes, and printing on the labels cannot be performed even if the character string is loaded.

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Detailed Description Text - DETX (167): An apparatus 1 can perform printing on different types of label sheets if they have the same label attributes as those in registration upon readout of the registered character string.

Detailed Description Text - DETX (169): FIG. 52 is a flow chart showing processing for inputting a character string and registering it in a storage unit 31. If a sheet number (identification code) of a label sheet on which a character string is to be printed is input (#1400), the vertical and horizontal lengths of a printing range of a label corresponding to this sheet are read out from the storage unit 31 (#1401). A maximum line count (L.sub.max) capable of printing characters each having a minimum character size is calculated in accordance with the vertical length of the printing range (#1402). A maximum character count (M.sub.max) capable of printing characters each having a minimum character size is calculated in accordance with the horizontal length of the printing range (#1403). Thereafter, operations for inputting and editing a character string to be printed are performed (#1404). Upon completion of the input and editing operations, if the edited character string is designated to be registered (#1405), registration processing is performed (#1406). This registration processing is processing for registering the edited character string (character string information) and additional information of this character string as a registration file (registration information) in the storage unit 31. The additional information includes character size information of characters constituting the character string, the character appearance attribute of the character string, the sheet number of the label sheet on which the character string is printed, and information for discriminating automatic character size from the character size designated by the user.

Detailed Description Text - DETX (170): When printing processing for printing information on a label is designated upon completion of the processing in #14104, the character string edited by the input/editing operation is printed on a label corresponding to the sheet number input in #1400.

Detailed Description Text - DETX (171): FIGS. 53 and 54 are flow charts for reading out a character string registered in the storage unit 31. When a sheet number of a desired label sheet on which a character string is to be printed is input (#1450), the vertical and horizontal lengths of a printing range of a label corresponding to the sheet number are read out from the storage unit 31 (#1451). A maximum line count (L.sub.max) capable of printing characters each having a minimum character size is calculated in accordance with the vertical length of the printing range (#1452). A maximum character count (M.sub.max) capable of printing characters each having a minimum character size is calculated in accordance with the horizontal length of the printing range (#1453). When registration characters for specifying a registration file are input (#1454), retrieval from a large number of pieces of registered additional information is started (#1455). The registration characters consist of two predetermined characters input in registration of character string information or the like. As a result of retrieval, if a registration file cannot be found (#1456), a message representing that the designated registration file is not present is displayed, and processing is ended (#1457). On the other hand, as a result of retrieval, if the registration file is found (#1456), the first seven characters of the

character string in the registration file are displayed on a liquid crystal display unit 7 (#1458). This retrieval can be performed by designating one of the two characters as registration characters, as described above. In this case, a plurality of registration files may be retrieved, and the first seven characters of the plurality of character strings are sequentially displayed on the liquid crystal display unit 7. The user vertically shifts the cursor to designate a predetermined registration file (#1459). It is checked whether the sheet number input in #1450 coincides with the sheet number in the retrieved additional information (#1460). If YES in #1460, the character string information corresponding to this additional information is loaded (#1461). If NO in #1460, the next processing is performed. The line count of the character string in the registration file designed in #1459 is calculated (#1462). If this line count is larger than the maximum line count (L.sub.max) calculated in #1452 (#1463), a message saying that "This label cannot be loaded" is displayed on the liquid crystal display unit 7 (#1464), and the flow returns to #1458. When the maximum line count calculated in #1462 is equal to or smaller than the maximum line count (L.sub.max) (#1463), the maximum character count within the line of the character string of the registration file designated in #1459 is calculated in #1465. If this maximum character count is larger than the maximum character count (M.sub.max) calculated in #1453 (#1466), a message saying that "This label cannot be loaded" is displayed on the liquid crystal display unit 7 (#1464), and the flow returns to #1458. If the maximum character count calculated in #1465 is equal to or smaller than the maximum character count (M.sub.max) calculated in #1453 (#1466), the registration file is loaded (#1467). The character size information and the character appearance attribute information in the registration file are cleared, and the character size of the character string in the registration file is set to the automatic character size (#1468). The character appearance attribute information is cleared because the character size may be substantially increased by the character appearance attribute. The character size of this character string is set to fall within the printing range of the label read out from the storage unit 31 in #1451 (#1469). The character string in the registration file is displayed on the liquid crystal display unit 7 in the character size set as described above.

Claims Text - CLTX (1): 1. A label printing apparatus for inputting a desired character string with keys and printing the input character string in units of labels arranged on a label sheet, comprising

Claims Text - CLTX (9): second processing means for discriminating a printing area of the label from the specified label information, comparing a vertical length of the printing area with a horizontal length of the printing area to determine a smaller one of the vertical and horizontal lengths as a reference length, and selecting a maximum character size falling within a square area having one end as the reference length from the character size information,

Claims Text - CLTX (11): fourth processing means for always comparing the horizontal length of the generated character string with the horizontal length of the printing area of the label, selecting a character size smaller than a character size of the generated character string from the character size information when the horizontal length of the

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generated character string is larger than that of the printing area, and changing said selected character size into this small character size.

Claims Text - CLTX (14): said fourth processing means selects a character size smaller than a character size of the character string and changes the character sizes of all lines to this small character size when said fourth processing means always compares the horizontal length of the generated character string with the horizontal length of the printing area of the label in units of lines, and a line in which the horizontal length of the character string is larger than that of the printing area is present, and

Claims Text - CLTX (16): fifth processing means for adding the vertical lengths of the character sizes determined by the fourth processing means to obtain an overall length of all the lines, comparing the overall length with the vertical length of the printing area of the label, selecting a character size smaller than the character string when the overall length is larger than the vertical length of the printing area, and changing the character sizes of all the lines to this selected small character size.

Claims Text - CLTX (17): 3. A label printing apparatus for inputting a desired character string with keys and printing the input character string in units of labels arranged on a label sheet, comprising

Claims Text - CLTX (19): printing means for performing printing on each label;

Claims Text - CLTX (25): second processing means for discriminating a printing area of the label from the specified label information, comparing a vertical length of the printing area with a horizontal length of the printing area to determine a smaller one of the vertical and horizontal lengths as a reference length, and selecting a maximum character size falling within a square area having one end as the reference length from the character size information,

Claims Text - CLTX (27): fourth processing means for always comparing the horizontal length of the generated character string with the horizontal length of the printing area of the label, selecting a character size smaller than a character size of the character string from the character size information when the horizontal length of the character string is larger than that of the printing area, and changing all character sizes to this small character size.

Claims Text - CLTX (30): said fourth processing means selects a character size smaller than a character size of the character string and changes the character sizes of all lines to this small character size when said fourth processing means always compares the horizontal length of the generated character string with the horizontal length of the printing area of the label in units of lines, and a line in which the horizontal length of the character string is larger than that of the printing area is present, and

Claims Text - CLTX (32): fifth processing means for adding the vertical lengths of the character sizes determined by the fourth processing means to obtain an overall length of

all the lines, comparing the overall length with the vertical length of the printing area of the label, selecting a character size smaller than the character string when the overall length is larger than the vertical length of the printing area, and changing the character sizes of all the lines to this selected small character size.

Claims Text - CLTX (35): sixth processing means for determining the printing area of the label from the label information of the label sheet subjected to printing and calculating the horizontal length of the printing area,

Claims Text - CLTX (42): tenth processing means for determining the printing area of the label from the label information of the label sheet subjected to printing and calculating the vertical length of the printing area,

Claims Text - CLTX (52): 10. An apparatus according to claim 9, wherein said processing means further comprises line overflow determining means for determining whether a character string which is being edited and is input extending in a plurality of lines falls within the printing area of the label.

Claims Text - CLTX (59): tenth processing means for determining the printing area of the label from the label information of the label sheet subjected to printing and calculating the vertical length of the printing area,

Claims Text - CLTX (70): 14. An apparatus according to claim 13, wherein said processing means further comprises line overflow determining means for determining whether a character string which is being edited and is input extending in a plurality of lines falls within the printing area of the label,

Claims Text - CLTX (80): 16. An apparatus according to claim 15, wherein said processing means further comprises line overflow determining means for determining whether a character string which is being edited and is input extending in a plurality of lines falls within the printing area of the label,

Claims Text - CLTX (94): twenty-third processing means for reducing the vertical and horizontal lengths of the predetermined label and a character size of a character printed on the predetermined label on the basis of the reduction magnification selected by said twenty-second processing means, for displaying the reduced predetermined label in a form of a quadrangular frame on said display means, and for displaying each character to be printed on said predetermined label as a dot pattern having a reduced character size at a position corresponding to an interior of the frame.

Claims Text - CLTX (96): 20. An apparatus according to claim 4, wherein said label printing apparatus is an apparatus for performing printing on a label having two columns, and said processing means comprise

Claims Text - CLTX (97): twenty-fifth processing means for causing said display means to display a selection screen having a plurality of choices including a choice for selecting

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whether each character string to be printed in each of the two columns of said label is an erecting or inverted character string and a choice for selecting whether character strings to be printed in the two columns are the same or different,

Claims Text - CLTX (99): twenty-seventh processing means for, when a predetermined character string is input in accordance with designation on the input screen, executing printing processing on the label in accordance with selection contents of the predetermined character string.

Claims Text - CLTX (100): 21. An apparatus according to claim 4, wherein said label printing apparatus is an apparatus for printing input character strings in a label having three columns, respectively, and

Claims Text - CLTX (104): thirtieth processing means for executing printing processing of a plurality of character strings on the label when the plurality of character strings are input in accordance with designation on the input screen.

Claims Text - CLTX (105): 22. An apparatus according to claim 21, wherein said label printing apparatus is an apparatus for printing input character strings in a label having three columns, respectively, and

Claims Text - CLTX (109): thirtieth processing means for executing printing processing of a plurality of character strings on the label when the plurality of character strings are input in accordance with designation on the input screen.

Claims Text - CLTX (110): 23. An apparatus according to claim 4, wherein said label printing apparatus further comprises feed means for feeding an inserted label sheet to a printing position in printing processing and position detecting means for detecting whether the label sheet fed by said feed means is set at a position serving as a reference for the printing processing, and

Claims Text - CLTX (111): said processing means comprise feed control means for controlling feeding of the label sheet subjected to printing.

Claims Text - CLTX (120): thirty-fifth processing means for specifying the position information of an unnecessary printing label of a plurality of labels arranged on the label sheet on the basis of an input position code when the position code is input to designate a layout position of the unnecessary printing label of the labels arranged on the label sheet, and

Claims Text - CLTX (121): thirty-sixth processing means for sequentially executing printing processing of the input character strings on respective labels except for the unnecessary printing label on the basis of the position information specified by said thirty-fifth processing means and the position information and the size information of the label sheet which are stored in said storage means.

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Claims Text - CLTX (125): thirty-seventh processing means for causing said position storage unit to store the position code representing a printing start position of the label sheet subjected to printing,

Claims Text - CLTX (126): thirty-eighth processing means for defining as the printing start position a layout position designated by the position code stored in said position storage unit, and for sequentially performing printing processing on the labels on the basis of the position information and the size information of the labels arranged on the label sheet,

Claims Text - CLTX (127): thirty-ninth processing means for specifying the position code representing a printing start position in next printing processing on the basis of the layout position of a last printed label in the printing processing, and

Claims Text - CLTX (129): 27. An apparatus according to claim 26, wherein said thirty-seventh processing means automatically stores a predetermined specific position code in said position storage unit when an unused label sheet is subjected to printing processing.

Claims Text - CLTX (135): thirty-seventh processing means for causing said position storage unit to store the position code representing a printing start position of the label sheet subjected to printing,

Claims Text - CLTX (136): thirty-eighth processing means for defining as the printing start position a layout position designated by the position code stored in said position storage unit, and for sequentially performing printing processing on the labels on the basis of the position information and the size information of the labels arranged on the label sheet,

Claims Text - CLTX (137): thirty-ninth processing means for specifying the position code representing a printing start position in next printing processing on the basis of the layout position of a last printed label in the printing processing, and

Claims Text - CLTX (139): 30. An apparatus according to claim 29, wherein said thirty-seventh processing means automatically stores a predetermined specific position code in said position storage unit when an unused label sheet is subjected to printing processing.

Claims Text - CLTX (157): forty-fourth processing means for causing said display means to display a screen for prompting an input of an identification code of a desired label sheet subjected to printing,

Claims Text - CLTX (160): forty-seventh processing means for causing said second to fourth processing means to change the character string information so as to be suitable for the desired label sheet subjected to printing when said forty-fifth processing means determines that the identification codes do not coincide with each other.

Claims Text - CLTX (167): 37. An apparatus according to claim 36, wherein said processing means further comprises line overflow determining means for determining whether a character string which is being edited and is input extending in a plurality of lines falls within the printing area of the label.

Claims Text - CLTX (181): twenty-third processing means for reducing the vertical and horizontal lengths of the predetermined label and a character size of a character printed on the predetermined label on the basis of the reduction magnification selected by said twenty-second processing means, for displaying the reduced predetermined label in a form of a quadrangular frame on said display means, and for displaying each character to be printed on said predetermined label as a dot pattern having a reduced character size at a position corresponding to an interior of the frame.

Claims Text - CLTX (183): 41. An apparatus according to claim 3, wherein said label printing apparatus is an apparatus for performing printing on a label having two columns, and said processing means comprise

Claims Text - CLTX (184): twenty-fifth processing means for causing said display means to display a selection screen having a plurality of choices including a choice for selecting whether each character string to be printed in each of the two columns of said label is an erecting or inverted character string and a choice for selecting whether character strings to be printed in the two columns are the same or different,

Claims Text - CLTX (186): twenty-seventh processing means for, when a predetermined character string is input in accordance with designation on the input screen, executing printing processing on the label in accordance with selection contents of the predetermined character string.

Claims Text - CLTX (187): 42. An apparatus according to claim 3, wherein said label printing apparatus is an apparatus for printing input character strings in a label having three columns, respectively, and

Claims Text - CLTX (191): thirtieth processing means for executing printing processing of a plurality of character strings on the label when the plurality of character strings are input in accordance with designation on the input screen.

Claims Text - CLTX (192): 43. An apparatus according to claim 42, wherein said label printing apparatus is an apparatus for printing input character strings in a label having three columns, respectively, and

Claims Text - CLTX (196): thirtieth processing means for executing printing processing of a plurality of character strings on the label when the plurality of character strings are input in accordance with designation on the input screen.

Claims Text - CLTX (197): 44. An apparatus according to claim 3, wherein said label printing apparatus further comprises feed means for feeding an inserted label sheet to a

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printing position in printing processing and position detecting means for detecting whether the label sheet fed by said feed means is set at a position serving as a reference for the printing processing, and

Claims Text - CLTX (198): said processing means comprise feed control means for controlling feeding of the label sheet subjected to printing.

Claims Text - CLTX (207): thirty-fifth processing means for specifying the position information of an unnecessary printing label of a plurality of labels arranged on the label sheet on the basis of an input position code when the position code is input to designate a layout position of the unnecessary printing label of the labels arranged on the label sheet, and

Claims Text - CLTX (208): thirty-sixth processing means for sequentially executing printing processing of the input character strings on respective labels except for the unnecessary printing label on the basis of the position information specified by said thirty-fifth processing means and the position information and the size information of the label sheet which are stored in said storage means.

Claims Text - CLTX (212): thirty-seventh processing means for causing said position storage unit to store the position code representing a printing start position of the label sheet subjected to printing.

Claims Text - CLTX (213): thirty-eighth processing means for defining as the printing start position a layout position designated by the position code stored in said position storage unit, and for sequentially performing printing processing on the labels on the basis of the position information and the size information of the labels arranged on the label sheet,

Claims Text - CLTX (214): thirty-ninth processing means for specifying the position code representing a printing start position in next printing processing on the basis of the layout position of a last printed label in the printing processing, and

Claims Text - CLTX (216): 48. An apparatus according to claim 47, wherein said thirty-seventh processing means automatically stores a predetermined specific position code in said position storage unit when an unused label sheet is subjected to printing processing.

Claims Text - CLTX (222): thirty-seventh processing means for causing said position storage unit to store the position code representing a printing start position of the label sheet subjected to printing.

Claims Text - CLTX (223): thirty-eighth processing means for defining as the printing start position a layout position designated by the position code stored in said position storage unit, and for sequentially performing printing processing on the labels on the basis of the position information and the size information of the labels arranged on the label sheet,

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Claims Text - CLTX (224): thirty-ninth processing means for specifying the position code representing a printing start position in next printing processing on the basis of the layout position of a last printed label in the printing processing, and

Claims Text - CLTX (226): 51. An apparatus according to claim 50, wherein said thirty-seventh processing means automatically stores a predetermined specific position code in said position storage unit when an unused label sheet is subjected to printing processing.

Claims Text - CLTX (244): forty-fourth processing means for causing said display means to display a screen for prompting an input of an identification code of a desired label sheet subjected to printing.

Claims Text - CLTX (247): forty-seventh processing means for causing said second to fourth processing means to change the character string information so as to be suitable for the desired label sheet subjected to printing when said forty-fifth processing means determines that the identification codes do not coincide with each other.

US-PAT-NO: 5975779
DOCUMENT-IDENTIFIER: US 5975779 A
TITLE: Character information processor
DATE-ISSUED: November 2, 1999
INVENTOR-INFORMATION:

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Hayama; Hitoshi	Suwa	N/A	N/A	JP
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US-CL-CURRENT: 400/615.2

ABSTRACT: A character information processor for carrying out the processing for printing an input character string, includes: a contact-command receiving section for receiving a contact command which commands to print at a character pitch of 0 between the adjacent two characters; and a printing control section for causing to print two characters, which are defined by the contact command, at a character pitch of 0. In addition, a character information processor for printing an input character string on a printed medium so as to exhibit a printing effect on the basis of the stored attribute data of printing effect, includes: a changed-contents available-extent receiving section for allowing a user to select an available extent of the attribute data of printing effect from a plurality of phased extents with respect to the input character string, each of the phased extents having a greater size than an available minimum size; and an attribute-data changing section for allowing to change the attribute data of printing effect in accordance with the changed contents received by the attribute-data changed-contents receiving section.
3 Claims,   16 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 14

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Brief Summary Text - BSTX (8): In addition, in the case of a tape printing device, users tend to require that a label made by the tape printing device has many printing effects. Therefore, functions for complying with such a request for the variety of printing effects have been proposed.

Brief Summary Text - BSTX (9): The printing effects herein include the effect on the whole input character string (which will be hereinafter referred to as a "document"), the effect on a partial character-string unit (which will be hereinafter referred to as a "paragraph") obtained by dividing a character string in the longitudinal direction of a tape, and the effect on the respective characters. The attributes of printing effects on a document include, for example, the length of a label, the lengths of margins provided before and after a character string, a ground design applied to the whole label, and so

forth (a set of these attributes will be hereinafter referred to as a "format"). In addition, the attributes of printing effects on a paragraph include, for example, the character size on the respective lines, the layout of characters in a paragraph, the table printing, and so forth (a set of these attributes will be hereinafter referred to as a "style"). Moreover, the attributes of printing effects on the respective characters include the ornamental writing, the half-tone dot meshing, and so forth (a set of these attribute will be hereinafter referred to as a "mode").

Brief Summary Text - BSTX (13): An imprint figure formed on a seal has various ornaments although the degree of ornament is less than those of designs on a label, and it often includes an optional mark. For example, a logo mark is applied to a company's name seal. In a case where such a mark is made using the external character function, it may be required to divide the mark into two external characters in view of the size thereof and so forth. In this case, when the mark is transferred and printed, the attribute must be set so that these external characters contact with each other. In the case of word processors, personal computers and so forth, although the character pitch can be set only for any one of the whole pages, each page and each line, it can not be set for single characters. Therefore, it is not possible to set a single character pitch downstream of a selected character different from the other character pitches.

Detailed Description Text - DETX (55): In a case where an editing symbol is the present proposed editing symbol, when the select key is operated, the routine goes from step 107 to step 109, and it is decided by the CPU 21 that the present proposed editing symbol is selected. In addition, the CPU 21 causes to store the code of the selected editing symbol at a location next to the prior final character code in a text area for input character strings in the RAM 23. Moreover, the CPU 21 operates the display buffer in the RAM 23 to cause the displayed screen to return to the character input screen displayed at the stage that the symbol key is operated, and to display a dot pattern which defines the editing symbol at the character input location directed by the cursor when the symbol key is depressed, so that a series of processing steps are completed.